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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,058	03/15/2005	Wilhelm Scherze	1998.015US1	9013

21186 7590 06/26/2009
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EXAMINER

HOBBS, MICHAEL L

ART UNIT	PAPER NUMBER
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1797

NOTIFICATION DATE	DELIVERY MODE
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06/26/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No. 10/528,058	Applicant(s) SCHERZE ET AL.	
	Examiner MICHAEL HOBBS	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant's amendment filed on 04/06/2007 has been considered and entered for the record. Applicant's amendment overcomes the 35 USC 103(a) rejection in paragraphs 6, 17, 20 and 23.
2. Claims 1-20 are pending further examination upon the merits.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

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not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1, 3, 4 and 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minuth (US 5,665,599) in view of Banes (US 6,586,235) and in further views of Focht (US 4,974,952) and Seymour (US 5,565,598).

1. For claims 1 and 15, Minuth discloses a chamber for cultivating cells that includes a cell carrier (17) or membrane plate that divides the chamber into two portions. Also, the chamber includes conduits (21, 22) for delivering nutrient media to the cells and a sensor (23) is placed within the cell chamber. Furthermore, the chamber includes a glass plate(13) which is located on one side of the cell carrier plate and above the microscope objective (14). On the other side of the cell carrier plate is another thin disk (13a) which covers the aperture and is also made out of glass (col. 3 lines 39-40). Also, the chamber can be heated by using the holding plates (plates 19) to heat the chamber (col. 3 lines 57-58). The placement of the heater is being interpreted as being between a first transparent glass pane and a viewer. While not specifically teaching that a light source is on the other side of the device, it is implied within the teachings of that a light source would be opposite of the microscope objective in order to illuminate the cells on the carrier plate.

2. Banes discloses an apparatus for growing cells that includes inlets and outlets for exchanging culture medium and includes a cover slide for observing the conditions of the culture by a microscope. For claims 1 and 15, Banes discloses a membrane

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(membrane 100) that is made of a transparent material so that the entire apparatus may be placed on a microscope (col. 6 lines 13-15). Banes shows that the problem of lighting and observing with a microscope a cell culture contained on a membrane and that this particular aspect of the problem has been solved. Other methods of solving this problem of observing a cell culture include the use of a video camera or a CCD device. Therefore, following rationale E of *KSR*, 550 US at ____, 82 USPQ2d at 1397, it would have been obvious for one of ordinary skill in the art to try the transparent membrane of Banes within the chamber of Minuth with a reasonable expectation of success.

3. Focht discloses a live cell culture chamber that includes two glass windows that allows observation of the infusion chamber. For claims 1 and 15, Focht discloses a light source on the second side of the chamber and used to light the inside of the chamber (Fig. 1). Also, the light is fully capable of lighting the chamber through the membrane. Moreover, it would be obvious to one of ordinary skill in the art to have the light source suggested by Focht on the opposite side of the membrane of Minuth and Banes in order to illuminate the cells on the membrane.

4. Minuth, Banes and Focht are silent regarding a control system that receives temperature measurements from an infrared sensor and controlling the heater to maintain a constant temperature within the cell chamber.

5. Seymour discloses an apparatus for controlling the diameter of growing crystals within a temperature controlled chamber that for claim 1 includes an infrared temperature sensing device (sensor 11) for monitoring the crucible temperature inside

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the furnace. The infrared sensor (sensor 11) sends a signal back to a three-term controller (controller 13) that is connected to a heating element (col. 3 lines 45-51). A set point is sent from the microprocessor (processor 10) to the controller (controller 13) which compares the set-point with the temperature received from the infrared sensor (sensor 11). The controller uses the data from the sensor and the set-point received from the processor in order to maintain a constant crucible temperature (col. 2 lines 25-29) and the measurements from the sensor are being interpreted as a continuous measurement. While the sensing and heating control system of Seymour is used to automate and optimize a Czochralski crystal pulling system, the control apparatus is analogous art in that this solves the problem of automatically controlling and monitoring the temperature within a closed vessel. Further, it would be obvious to one of ordinary skill in the art to employ the control system of Seymour with the cell culture chamber of Minuth, Banes and Focht in order to obtain the predictable result of controlling the temperature within the chamber.

6. With regards to claim 3, the second glass plate of Minuth is positioned in the top plate (plate 6) or cap of the device and for claim 4 the bottom of the chamber or bottom cap has an opening for a glass pane (Fig. 2).

7. For claim 6, the carrier plate (17) is connected to a ring (16) that is held in place by sealing ring (15, 15a) or retaining ring for holding the carrier plate (col. 2 lines 46-49). Regarding claim 7, Minuth teaches that a seal (18, 18a) is placed on top of the glass plate (13a) and this seal is fully capable of aseptically sealing the chamber. With regards to claim 8, Minuth also includes conduits (22) that make it possible to feed or

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drain liquid or gaseous media from the chamber (col. 3 lines 16-22). These conduits are fully capable of continuously feeding gas or liquid media to the chamber.

8. For claims 12, 13, 19 and 20, Banes discloses a metal such as stainless steel (col. 4 lines 35-26). Furthermore, stainless steel is known within the art to me a non-toxic material that will not adversely affect the growth of cells. Therefore, for one of ordinary skill in the art, it would have been obvious to try the stainless steel body as suggested by Banes in order to hold the culture medium of Minuth with a reasonable expectation of success.

9. Regarding claim 14, Minuth discloses passages above and below the membrane plate, but does not specify a greater number above or below. However, it would be obvious for one of ordinary skill in the art to employ more passages above the plate in order to be able to remove more culture medium from the chamber. Furthermore, it is noted that duplication of parts (greater number of passages above the membrane vs. below the membrane) with no presentation of a new or unexpected result over the prior art has no patentable significance, consult *In re Harza*, 247 F.2d 669, 124 USPQ 378 (CCPA 1960) and MPEP § 2144.04 VI (B).

10. Regarding claim 16, Minuth discloses a viewer or microscope objective on one side of the chamber (Fig. 2).

11. With regards to claims 17 and 18, Minuth and Banes imply that a light source on the opposite side of the membrane from the objective, but does not specifically disclose a light source.

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12. Focht discloses a live cell culture chamber that includes two glass windows that allows observation of the infusion chamber. For claims 17 and 18, Focht discloses a light source on the second side of the chamber and used to light the inside of the chamber (Fig. 1). Also, the light is fully capable of lighting the chamber through the membrane. Moreover, it would be obvious to one of ordinary skill in the art to have the light source suggested by Focht on the opposite side of the membrane of Minuth and Banes in order to illuminate the cells on the membrane.

13. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Minuth (US 5,665,599) in view of Banes (US 6,586,235) and in further views of Focht (US 4,974,952), Seymour (US 5,565,598) and Shanks (US 4,810,658).

7. Minuth, Banes, Focht and Seymour are silent regarding the glass panes being a sapphire glass.

14. Shanks discloses a photometric instrument that is used for optical analysis of samples on a microscope slide. Furthermore, for claim 5, Shanks discloses a slide that is made of glass, silica, inorganic crystal (e.g. sapphire) or a plastic material (col. 3 lines 35-38). Therefore, it would have been obvious to one of ordinary skill in the art to employ the sapphire slide as suggested by Shanks within the culture chamber of Minuth, Banes, Focht and Seymour in order to allow light to pass through the sample for optical testing. The suggestion for doing so at the time would have been in order to allow light from the liquid sample to emerge at different angles off-axis from the slide for the optical testing (Abstract).

15. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Minuth (US 5,665,599) in view of Banes (US 6,586,235) and in further views of Focht (US 4,974,952), Seymour (US 5,565,598) and Machemer et al. (J. Comp. Physiol. A (1991) 168: 1-12).

16. Minuth and Banes disclose a membrane, but Minuth, Banes, Focht and Seymour are silent regarding a biofoil.

17. Machemer discloses studying gravi-kinesis in paramecium by optically monitoring the cells in a plexus-glass chamber that includes bores for administering an experimental solution and a gas-permeable membrane. For claim 11, Machemer discloses using a gas-permeable transparent biofoil that is between the well and cover (Fig. 6c; section: Materials and methods paragraph 6 page 6 (chamber)). The use of this type of membrane was therefore known at the time of the invention to one of ordinary skill in the art. Therefore, one of ordinary skill in the art would have found it obvious to try the biofoil as suggested by Machemer to cultivate the cells of Minuth, Banes, Focht and Seymour with a reasonable expectation of success.

18. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minuth (US 5,665,599) in view of Banes (US 6,586,235) and in further views of Focht (US 4,974,952), Seymour (US 5,565,598) and Loeffler et al. (US 6,673,620).

19. For claim 9, Minuth teaches that the chamber or interior can be heated (col. 3 lines 54-59), but does not teach that the heater is electrical. Banes and Focht are silent

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regarding a heater. Seymour discloses a heater, but does not mention the heater being an electrical heater.

20. Loeffler teaches an in situ hybridization (ISH) cell that is used to observe fluid exchange on a microscope slide. For claim 9, Loeffler discloses that a heater plate is underneath the microscope slide (Fig. 1 elements 7 & 9) that can be used to heat the sample on the slide (col. 6 lines 5-8). The heater plate protects the heating element from any spillage of the liquid from the slide (col. 6 lines 11-12) and with the heat transfer into the fluid observation system being through the heating plate (col. 6 lines 13-14), thus the heating plate is integrated into the microscope slide. For claim 10, the heater plate of Loeffler is connected to a resistive heating (where resistive heating is being interpreted to be electrical heating) element (col. 6 line 10) that facilitates even heat transfer across the plate. At the time of the invention, it would have been obvious to one of ordinary skill in the art to employ the heater plate and heating element as suggested by Loeffler within the teachings of Minuth, Banes, Focht and Seymour in order to heat the sample within the chamber. The suggestion for doing so at the time would have been in order to stabilize the temperature around a desired mean temperature (col. 6 lines 16-17).

21. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Minuth (US 5,665,599) in view of Banes (US 6,586,235) and in further views of Focht (US 4,974,952), Seymour (US 5,565,598) and Pierson (US 6,498,862).

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22. Minuth, Banes, Focht and Seymour are silent regarding the membrane abutting a glass pane.

23. Pierson discloses a device for the evaluation of biofilms which is fully capable of cultivating cells and includes a transparent membrane (membrane 1) or membrane plate that is sandwiched between two glass slides (slides 2 & 3) and held to together with a bottom and a top bracket or cover plate (bracket 4). Furthermore, the cells on the membrane are observed by a microscope (microscope 26) or viewer (col. 6 lines 12-15 & 30-35). For claim 2, the slide of Pierson is adjacent or “abuts” the membrane (Fig. 3a). The placement of the membrane next to or adjacent to the slide, barring any alleged unexpected results, is strictly a engineering design choice that would be obvious to one of ordinary skill in the art to employ within the chamber of Minuth, Banes, Focht and Seymour with predictable results.

Response to Arguments

24. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection. The new grounds of rejection are in view of Seymour which discloses a heating system that automatically controls the temperature of a crucible through continuous measurement by an pyrometer of the interior temperature of the furnace. This newly applied reference corrects the deficiency within Minuth, Barnes and Focht.

Conclusion

25. No claims are allowed.
26. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL HOBBS whose telephone number is (571)270-3724. The examiner can normally be reached on Monday-Thursday 7:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. H./

Examiner, Art Unit 1797

/Jill Warden/

Supervisory Patent Examiner, Art Unit 1797